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Synthesis and characterization of a plant-based seed gum via etherification for effective treatment of high-strength agro-industrial wastewater

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1 **Synthesis and characterization of a plant-based seed gum via**
2 **etherification for effective treatment of high-strength agro-**
3 **industrial wastewater**

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16 **ABSTRACT**

17 Similar to many types of high-strength agro-industrial wastewater, palm oil mill effluent
18 (POME) contains countless colloidal solids and particles which are negatively charged. In this
19 study, cationic plant-based seed gum derived from *Cassia obtusifolia* was developed to study
20 its potential in treatment of POME. Quaternized *C. obtusifolia* seed gum (seed gum-
21 CHPTAC) was obtained through seed gum etherification with N-(3-chloro-2-hydroxypropyl)
22 trimethyl ammonium chloride (CHPTAC). The influence of cationic monomer concentration,
23 catalyst concentration, reaction temperature, and reaction time were studied for the synthesis
24 based on total suspended solids (TSS) and chemical oxygen demand (COD) removals from

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